Grand River Bridge
Spanning the Grand River on County Road Number 459,
approximately .25 miles west of Gentryville
Gentry County
Missouri

HAER No. MO-60

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

Historic American Engineering Record
Rocky Mountain Regional Office
National Park Service
U.S. Department of the Interior
P.O. Box 25287
Denver, Colorado 80225

HISTORIC AMERICAN ENGINEERING RECORD

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Grand River Bridge

HAER No. MO-60

Location: Spanning the Grand River on County Road Number 459, approximately .25 miles west of Gentryville in Gentry County, Missouri

Section 36, Township 62 North, Range 31 West

UTM: Point A: 15.4443061.384969
Point B: 15.4443052.385036
(See page for the location of Points A and B)

Latitude: 40 degrees, 7 minutes, 55 seconds
Longitude: 94 degrees, 20 minutes, 59 seconds

Quad: Albany South

Date of Construction: 1954 (Constructed 7 miles downstream from its present location)
1962 (Moved to its present location)

Builder: St. Joseph Structural Steel Company

Present Owner: Gentry County
Gentry County Courthouse
Albany, Missouri

Present Use: Vehicular bridge (to be replaced by a new vehicular bridge).
Projected date of removal: 1991

Significance: The main span of the Grand River Bridge is an example of a Parker through truss (a Parker through truss is a Pratt truss with a polygonal top chord). The top chord is unusually light for this long span, being comprised of two angles riveted together. This type of bridge was used from the middle 1800s to the early part of this century.

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I. HISTORY

A. Construction Chronology

The Grand River provides a natural barrier between the southeastern part of Gentry County and the trade routes along the Missouri River. A bridge was needed, however, to connect Gentryville with St. Joseph on the Missouri River.

According to the Missouri Highway and Transportation Department, in 1951, Gentry County hired the St. Joseph Structural Steel Company to construct a bridge approximately 7 miles downstream from the Grand River Bridge, just east of Gentryville. This bridge was completed in 1954 and consisted of two 160-foot long trusses and a 30-foot steel jump span. In 1957, this bridge was taken over by the State of Missouri and thc route was designated as State Highway "A". [1]

Then, on February 8, 1962, in the words of the Stanberry Headlight, "A north-south artery in Gentry County was broken Sunday night when an ice jam and high water washed away the Gentryville bridge. Clarence Bacon, operator of the Gentryville store, said that the bridge went out between 8:00 and 9:00 p.m. Sunday. The Gentryville bridge across Grand River was one of the oldest landmarks in the county, having been constructed in 1873 and 1874." [2]

The State of Missouri was replacing the bridge across the Grand River on State Letter Highway "A", approximately 7 miles downstream from the washed-out Gentryville bridge. [1] It was decided to move one of the 160-foot long trusss from State Highway "A" to its present location, approximately .25 miles west of Gentryville. The truss was match-marked, dismantled, and bolted back together at the Gentryville site. A concrete erosion wall was poured around the east pier and back toward the east abutment on the upstream side of the bridge. Two 30-foot approach spans were also constructed. All work was completed and the bridge opened for traffic in 1962. [3]

B. Location

The Grand River Bridge is located on County Road Number 459 over the Grand River, approximately .25 miles west of Gentryville in Gentry County, Missouri. This is an east-west road in Section 36, Township 62 North, Range 31 West.

III. THE BRIDGE

A. Description

The main span of the Grand River Bridge is a 160-foot, 10-panel riveted plate-connected Pratt through truss. The approach spans are comprised of two steel I-beam spans of 30 feet each on the east and west ends. The roadway is 13.5 feet wide with a timber deck. The piers are comprised of steel I-beams with one pier partially encased in concrete. The abutments are a combination of steel I-beams, concrete and wood. The total length of the bridge is 220 feet.

Main Span

The main span has diagonal members in tension, with seven inside vertical members acting in compression. The two vertical members nearest the ends of the main span are hangers and act in tension. The lower chord is a tcnsion member, consisting of two angles riveted together. The diagonal members and two vertical members nearest the ends are also two angles riveted together. The end posts are comprised of two angles with a solid cover plate,all riveted together. The top chords are comprised of two angles riveted together with no top plate. The seven inside vertical members in compression are two angles riveted together. There is a diagonal knee brace at the mid-point of the end posts, consisting of two angles riveted together. The upper sway bracing is fabricated of angles riveted to steel gusset plates that are connected to the top of each panel point and to the end posts. Some of the connections are made with bolts instead of rivets. The bolted connections have been made at joints that are disconnected when the truss was match-marked, dismantled, and moved to its present location.

The floor beams are steel S-shapes with S-shape stringers setting on top of them. The outside stringers with stcel C-shapes. Timber bridge planks span perpendicular to the steel stringers with a second layer of wood planks laid parallel, with the stringers four feet wide under each tirc track. These two longitudinal tracks form one lane down the center of the bridge.

Approach Spans

The two approach spans, one on the cast and one on the west, consist of steel-S-shape stringers with timber bridge planks laid perpendicular to the stringers. The outside stringers are steel C-shapes. A second layer of wood planks laid under each tire track continues across the jump spans.

Handrails

The handrail consists of vertical angles on each side of the roadway, bolted to the outside C-shape stringers. Two lines of longitudinal angles on each side of the roadway are bolted to the vertical angles. One of these angles forms the top of the rail and the second is spaced halfway between the top rail and the bridge deck.

Piers

The two piers consist of four steel H-piles per pier that are X-braced with steel C-shapes. the eAst pier is encased with concrete, approximately halfway up the piles. There is a concretc erosion wall projecting back from thc east pier towards the east abutment on the upstream side.

Abutments

The existing abutments consist of four steel H-piles, each with concrete and wood backwalls. The wingwalls are constructed of vertical steel H-piles with horizontal wood wings.

B. Ownership & Future

The Grand River Bridge has been owned and maintained by Gentry County, since it was moved to this location from its original site, approximately 7 miles downstream in 1962.

The county bridge inventory number is 459000.2. The bridge has moderate rust on its members and heavy deterioration of the wood deck. The bridge has been slated for replacement due to a low load capacity of 8 tons and a narrow roadway of only 13.5 feet.

The Grand River Bridge has been scheduled for replacement. The availability of the bridge to parties or organizations interested in its historical significance has been advertised. No responses have been received.

III. BIOGRAPHICAL MATERIAL

The Grand River Bridge has moved goods and services across the Grand River for many years, keeping Gentryville and the southeastern part of Gentry County connected to Stanberry, King City, and southwestern Gentry County. This bridge provides a route for the farmers of southeastern Gentry County to bring cattle to the stock yards and produce to the city of St. Joseph. In spite of this link, the city of Gentryville never grew very large and has a present-day (1990) population of approximately 30 people.

The St. Joseph Structural Steel Company which fabricated this bridge was founded in 1914 by T. W. Dodd and located in St. Joseph, Missouri. This firm also fabricated steel components, including steel bridges, until 1985 when the company was closed and the buildings sold. No plans were kept on the Grand River Bridge and no records exist concerning transactions made during the time of its construction. [4] No records exist in the St. Joseph Public Library or with the St. Joseph Historical Society. Also, no plans were found on this bridge in the microfilm library of the Missouri Highway and Transportation Department.

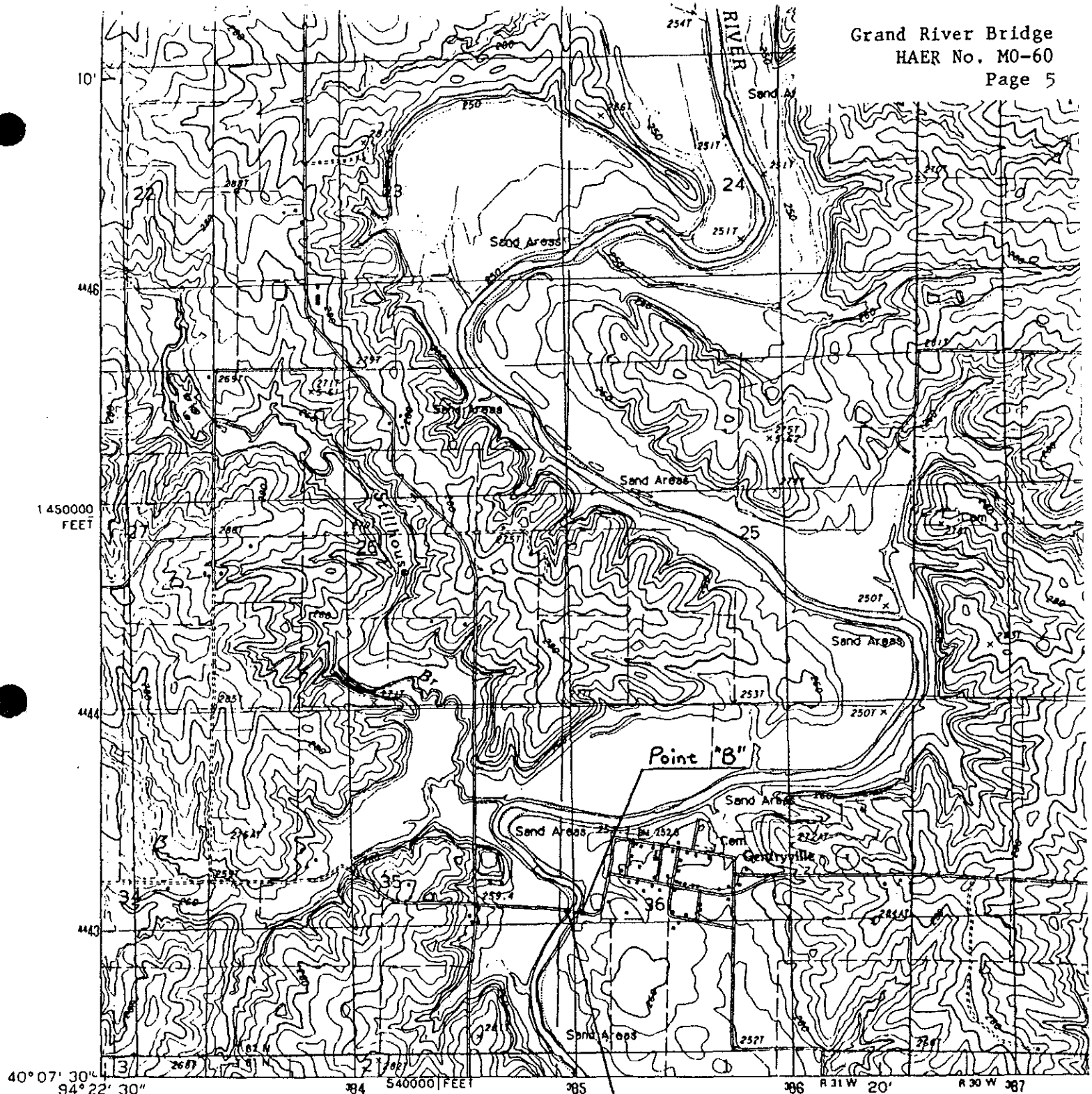
IV. ENDNOTES

[1] Missouri Highway and Transportation Department, State Highway Building, Jefferson City, Missouri 65102

[2] Stanberry Headlight, local newspaper, February 8, 1962, edition

[3] Comments from Glen Allenbrand, long-time resident of Albany and construction worker on the Grand River Bridge

[4] Comments from Bob Chesney, former owner of St. Joseph Structural Steel Company, St. Joseph, Missouri



PRODUCED BY THE UNITED STATES GEOLOGICAL SURVEY
CONTROL BY. . . . . USGS AND NOS/NOAA
COMPILED FROM AERIAL PHOTOGRAPHS TAKEN 1981
FIELD CHECKED . . . . . 1982. MAP EDITED 1985
PROJECTION . . . . . UNIVERSAL TRANSVERSE MERCATOR
GRID: 1000-METER UNIVERSAL TRANSVERSE MERCATOR . . . . . ZONE 15
10,000-FOOT STATE GRID TICKS . . . . . MISSOURI, WEST ZONE
UTM GRID DECLINATION . . . . . 0°51' WEST
1984 MAGNETIC NORTH DECLINATION . . . . . 5°30' EAST
VERTICAL DATUM . . . . . NATIONAL GEODETIC VERTICAL DATUM OF 1929
HORIZONTAL DATUM . . . . . 1927 NORTH AMERICAN DATUM

To place on the predicted North American Datum of 1983, move the projection lines as shown by dashed corner ticks (3 meters north and 19 meters east)

There may be private inholdings within the boundaries of any Federal and State Reservations shown on this map

No distinction made between houses, barns, and other buildings

Gray tint indicates area in which selected buildings are shown

PROVISIONAL MAP
Produced from original manuscript drawings. Information shown as of date of photography. 1

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